CHM129
Problem Set #8

① $\text{mol NaOH} = (0.200\ M)(0.2500\ L) = 0.0500\ \text{mol NaOH}$

$0.0500\ \text{mol NaOH}\left(\frac{40.00\ g\ NaOH}{1\ \text{mol NaOH}}\right) = 20.0\ g\ NaOH$

② $M_1 = 1.59\ M\ HCl$ $\quad M_2 = 0.100\ M\ HCl$

$V_1 = ?$ $\quad V_2 = 5.00\ mL$

$M_1V_1 = M_2V_2 \Rightarrow V_1 = \frac{M_2V_2}{M_1} = \frac{(0.100M)(5.00mL)}{1.59M}$

$V_1 = 0.314\ mL$ or $3.14 \times 10^{-4}\ L$

③ $HCl_{(aq)} + NaOH_{(aq)} \longrightarrow NaCl_{(aq)} + H_2O_{(l)}$

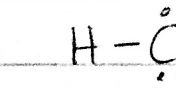
(a) $0.2500\ L(0.200\ M) = 0.0500\ \text{mol NaOH}\left(\frac{1\ \text{mol HCl}}{1\ \text{mol NaOH}}\right) = 0.0500\ \text{mol HCl}$

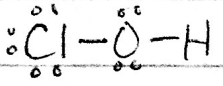
$V_{HCl} = \frac{0.0500\ \text{mol HCl}}{0.100\ M\ HCl} = 0.500\ L$ or $500.\ mL\ NaOH$

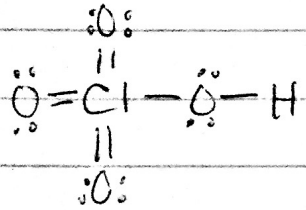
(b) $0.0500\ \text{mol NaOH}\left(\frac{1\ \text{mol NaCl}}{1\ \text{mol NaOH}}\right) = 0.0500\ \text{mol NaCl}$

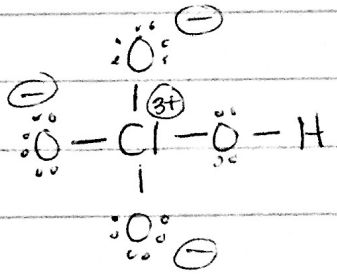
$[NaCl] = \frac{0.0500\ \text{mol NaCl}}{0.750\ L} = 0.0667\ M\ NaCl$

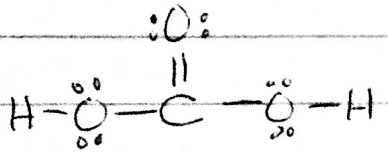
↖ total volume

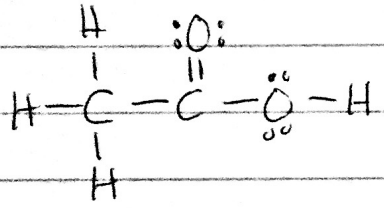
(4) (a) 

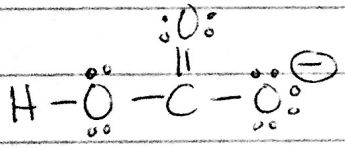
(b) 

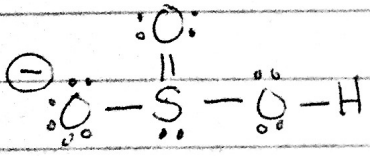
(c) 

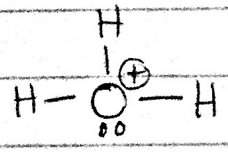
or 

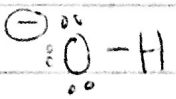
(d) 

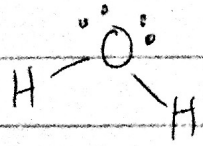
(e) 

(f) 

(g) 

(h) 

(j) 

(i) 

(K)